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ABSTRACT

This student manual on servicing the crankcase breather is the third of three in an instructional package on the lubrication system in the Small Engine Repair Series for handicapped students. The stated purpose for the booklet is to help students learn what tools and equipment to use and all the steps of the job. Informative material and photographs are provided on tools and equipment and steps for servicing the crankcase breather. A rating scale and chart are included for evaluation of student progress. (YLB)

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STUDENT MANUAL 2

SERVICE THE CRANKCASE BREATHER

Prepared by
Pamela Hill

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WHAT YOU WILL FIND IN THIS BOOKLET

The point of the booklet ..... Page 1

Tools and equipment for service of the crankcase breather ..... Page 2

Steps for service of the crankcase breather ..... Page 4

Can you service the crankcase breather? ..... Page 25

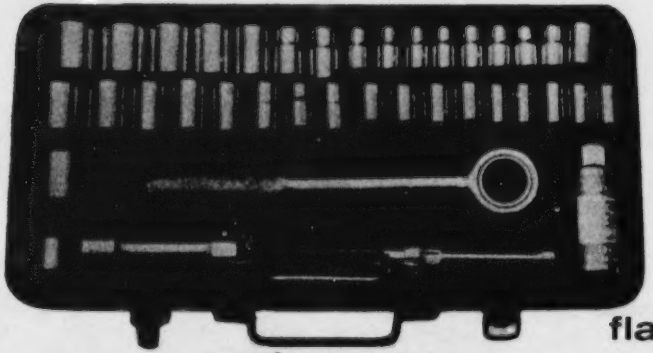
GASP!
GASP!

THE POINT OF THIS BOOKLET

As a small engine mechanic, you may have to service the crankcase breather on a small gas engine. This booklet will help you learn what tools and equipment to use and all the steps of this job.

As you practice these steps on a real engine, you and your teacher can rate your progress on a chart on pages 25-27. Don't forget to follow the safety and good work habits that you have learned.

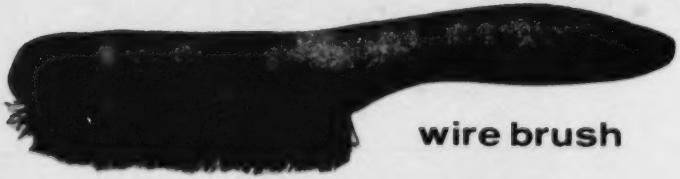
TOOLS AND EQUIPMENT:



socket set

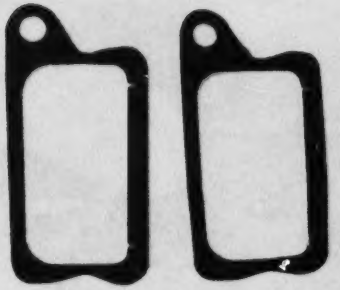
2 shop towels

flat-tip screwdriver



wire brush

wire feeler gauge



2 new crankcase breather gaskets

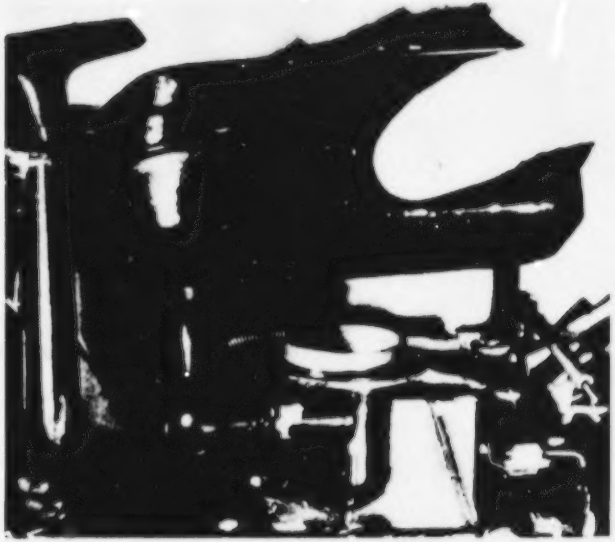
detergent soap

new crankcase breather

container for soapy water

STEPS:

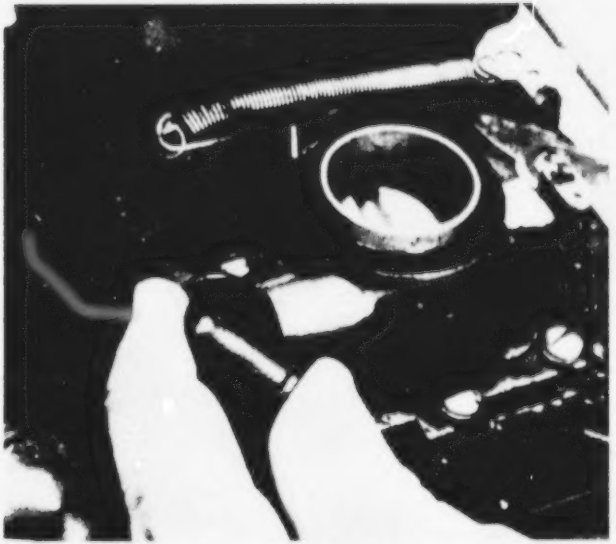
1. Remove the bolt on the carburetor air cleaner with the screwdriver.



2. Remove the air cleaner.

   CAUTION: Do not knock any dirt into the carburetor because dirt could damage the engine.

3. Carefully pull off one end of the breather hose that is connected to the carburetor tube.

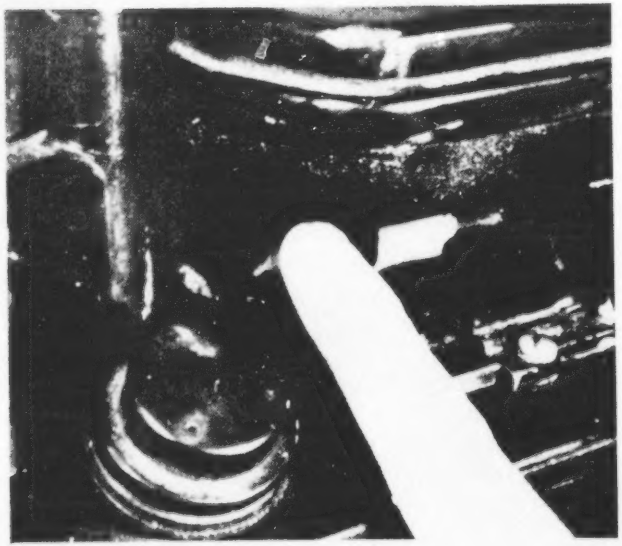


4. Pull off the other end of the hose that is connected to the breather tube. Set the hose aside.

CAUTION: Be careful not to tear the breather hose.

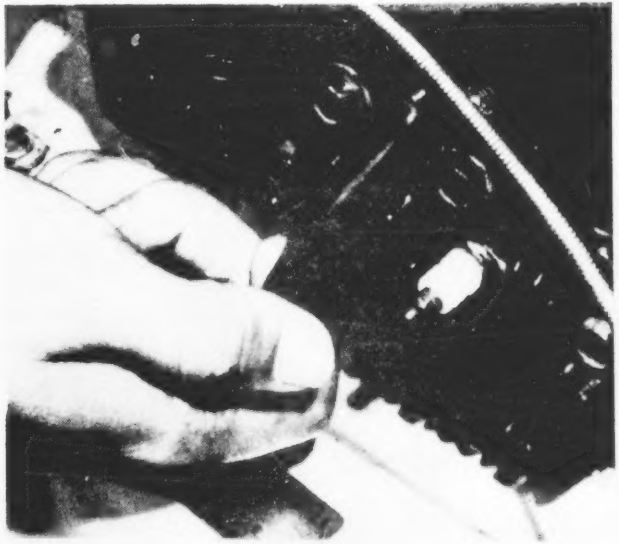
5. So that the engine can be started, replace the carburetor air cleaner and bolt.

6. Crank the engine.

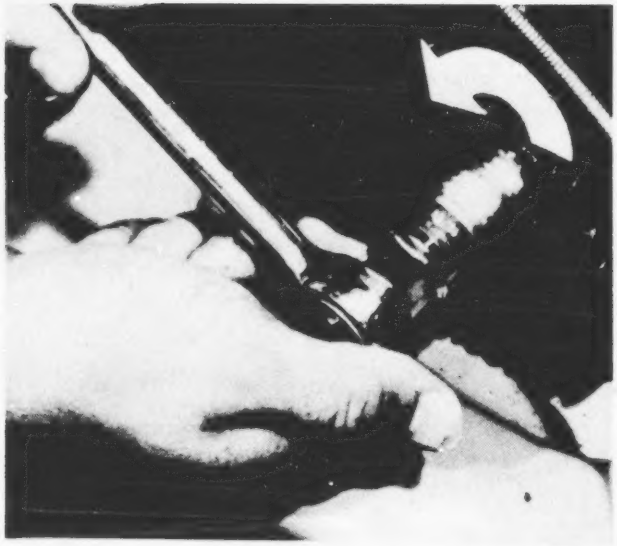


7. Place your finger over the breather tube.

NOTE: If you feel a suction or pressure on your finger, then the breather is not working properly. It may need to replaced with a new one.

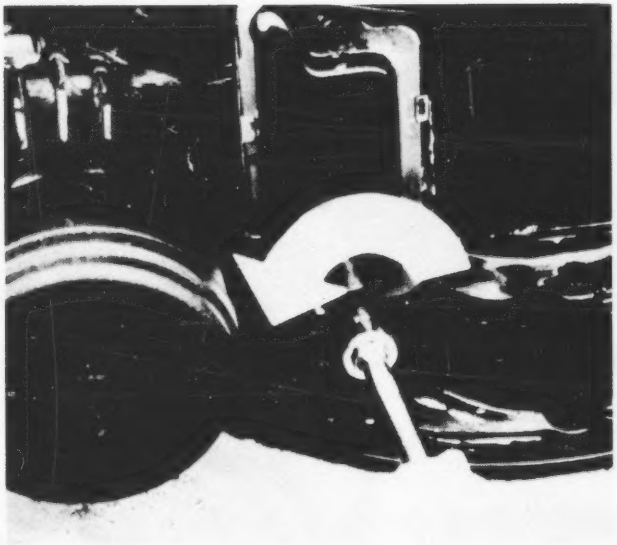


8. To begin servicing the breather, stop the engine, remove the spark plug wire. . .



9. and spark plug.

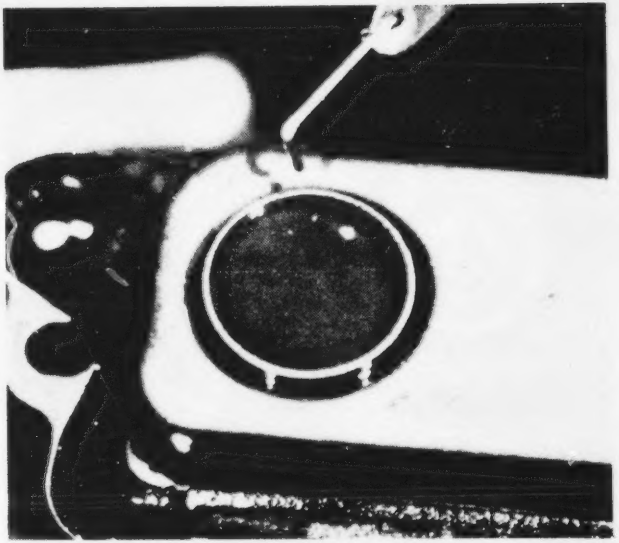
CAUTION: Use a spark plug socket and ratchet to remove the spark plug so that it is not damaged.



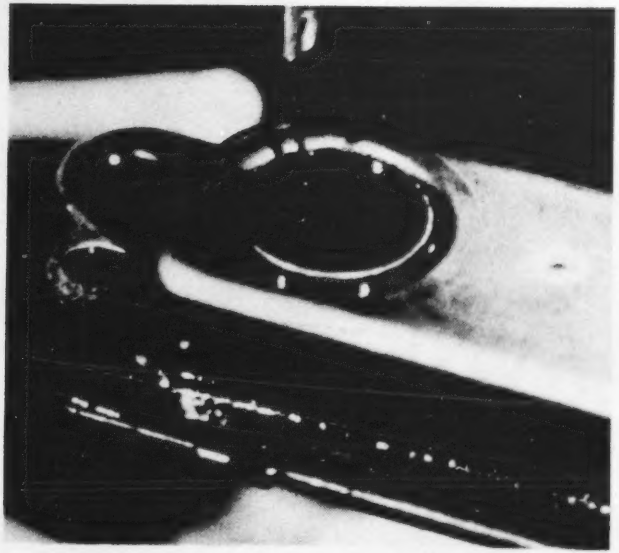
10. Using a 5/16" socket and nut driver, remove the 2 bolts which hold the breather to the crankcase. Set the bolts aside.

14

11. Remove the breather from the crankcase. . .

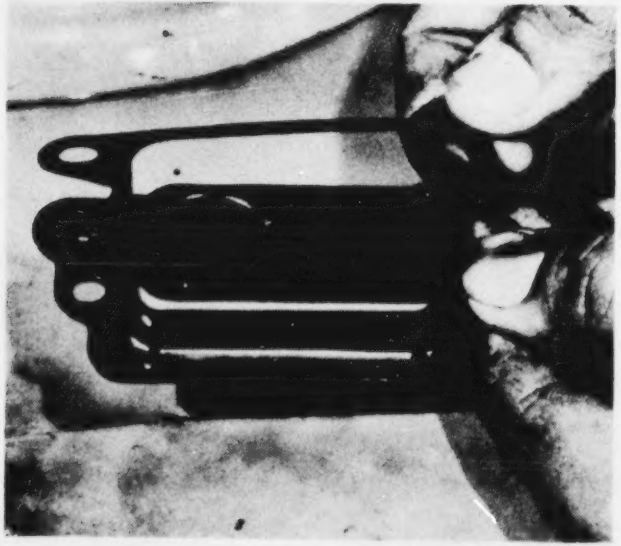


12. and turn the breather over. To check the correct size of the fiber disc valve, measure the space between the valve and breather with the .025" and .045" wire gauges.

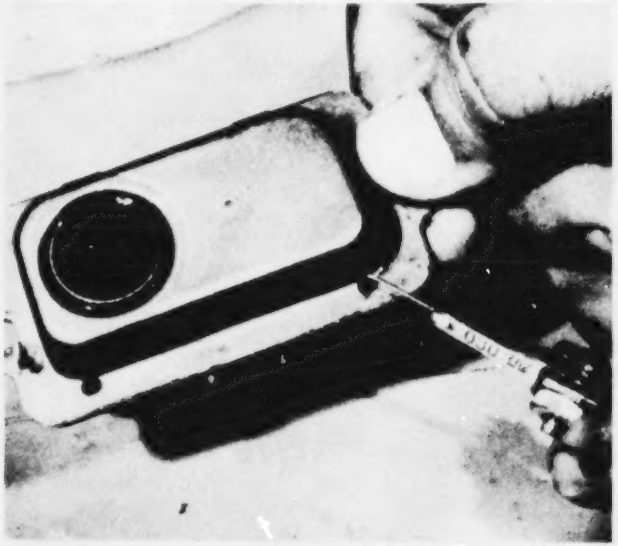


CAUTION: Do not force the wire gauge into the space. If the gauges fit into the space, then the clearance on the valve is either too small or too large.

NOTE: If the breather valve is completely closed or the gauge fits into the space, then the breather will need to be replaced with a new one.



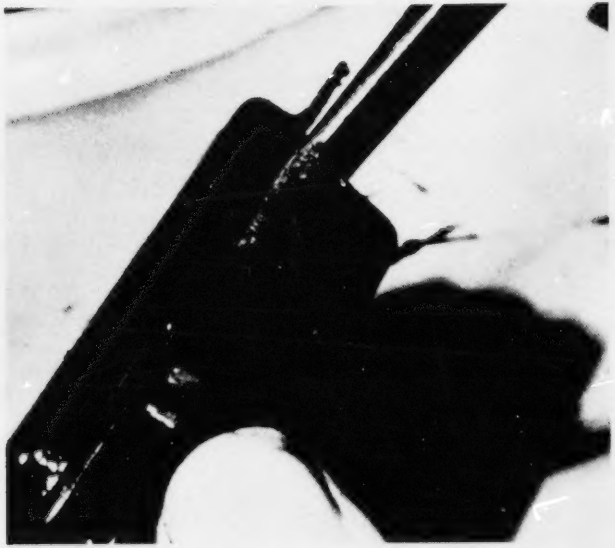
13. To clean the breather, remove the outside gasket. Put it in the trash.



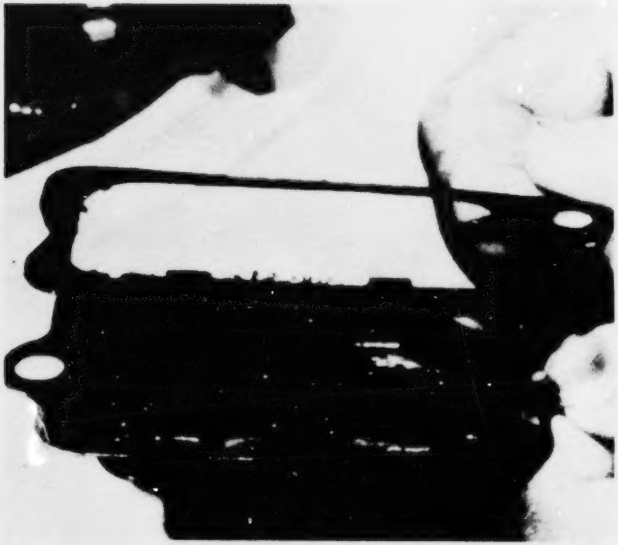
14. Place the wire gauge in the venting holes and scrape out any dirt.

NOTE: These holes should be open for draining oil out of the breather and back into the crankcase.

15. With the screwdriver, push up 2 brackets on one side of the breather.



16. Carefully open the cover. Slide the cover out from under the other 2 brackets and set the cover aside.



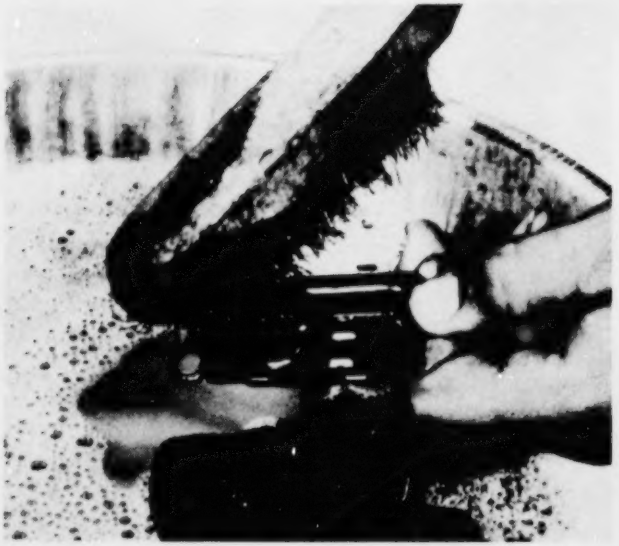
17. Remove the inside gasket and put it in the trash.

NOTE: Always replace the old breather gasket with a new one whenever the breather assembly is opened.

18. Mix a small amount of detergent soap and water in a cleaning container.

SAFETY TIP: Do not use gasoline for cleaning. It is a serious fire hazard.

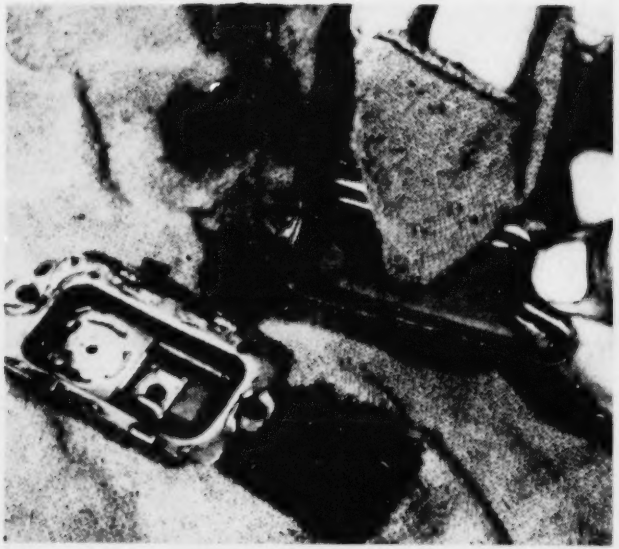
19. Using a clean shop towel, wash the breather cover...



20. and the breather body. Use a wire brush to scrub dirty spots on the breather parts.

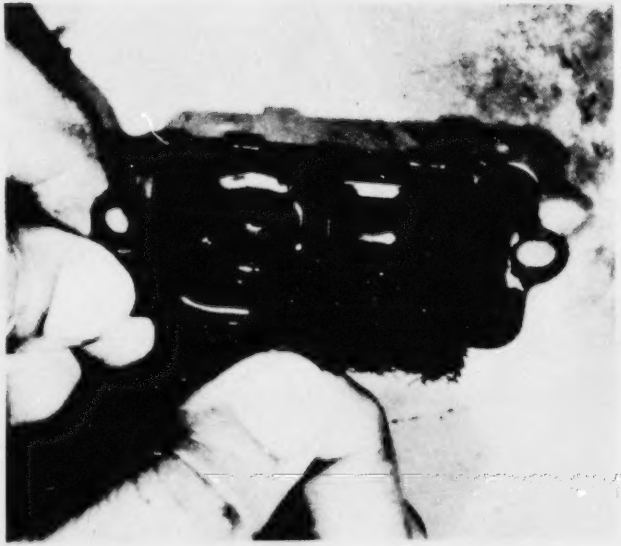
20

21. Wash the breather filter by squeezing soapy water in and out of it several times.



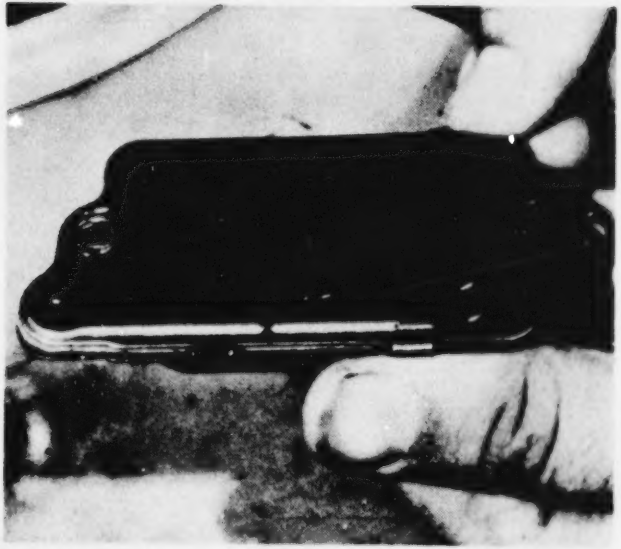
22. Dry the breather parts with a clean shop towel.

NOTE: An air hose may also be used to dry the parts.



23. To assemble the breather parts, first put the filter into the breather body.

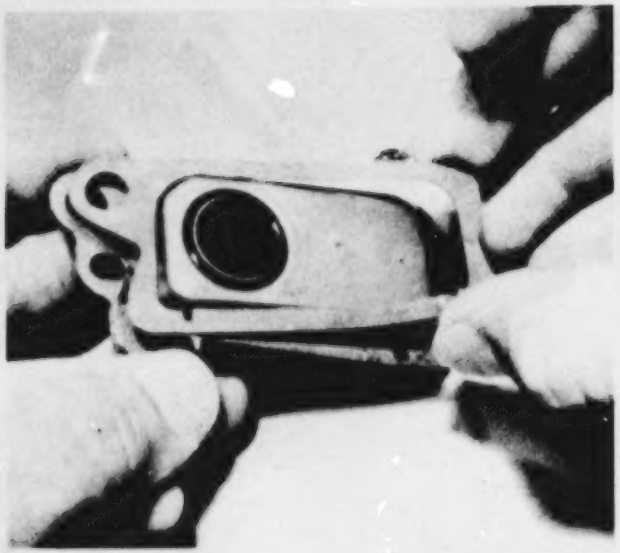
24. Place a new breather gasket on top of the body and under the 4 brackets.



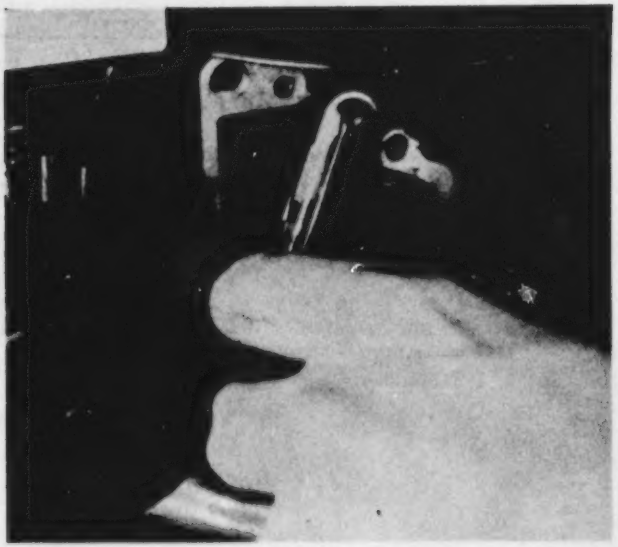
25. Slide the cover on the body and under the 4 brackets.

26. Using needle nose pliers, push the 2 open brackets down.

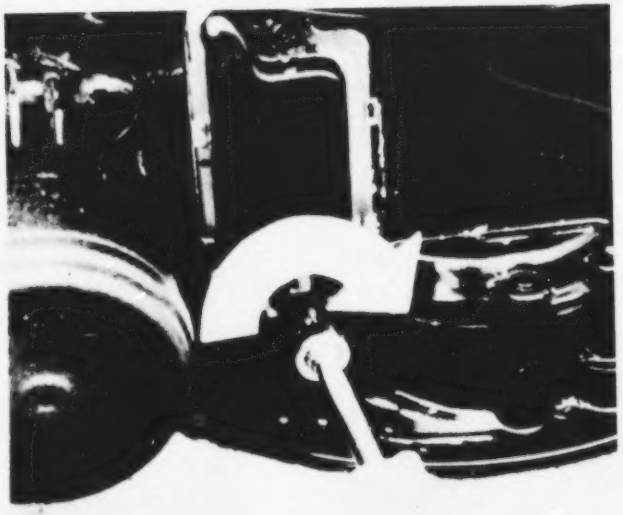
CAUTION: The cover and body should fit tightly together.



27. Place another new gasket on the outside of the breather.



28. Put the breather back into the crankcase.

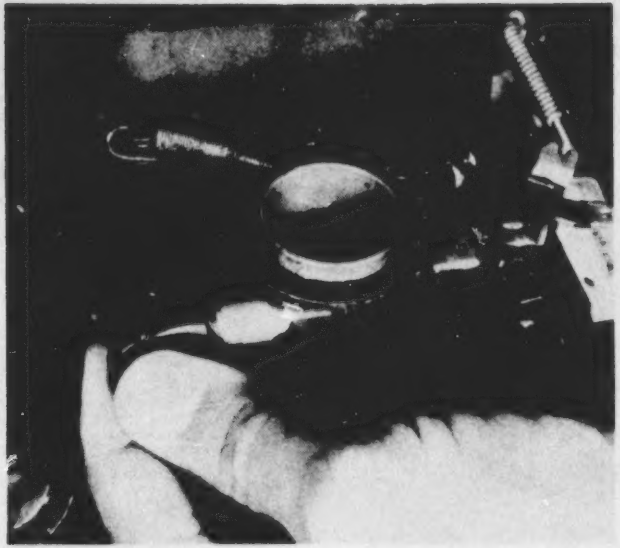


29. Replace the 2 bolts on the breather with a 5/16" socket and nut driver.

CAUTION: Do not overtighten the bolts because this could damage the breather.

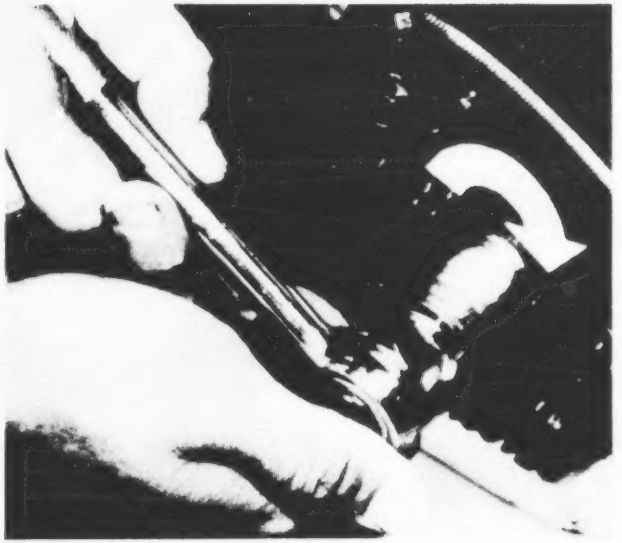
30. To replace the breather hose, first remove the carburetor air cleaner and bolt.

31. Pinch the 2 ends of the breather hose together so that it will easily fit onto the breather and carburetor tubes.

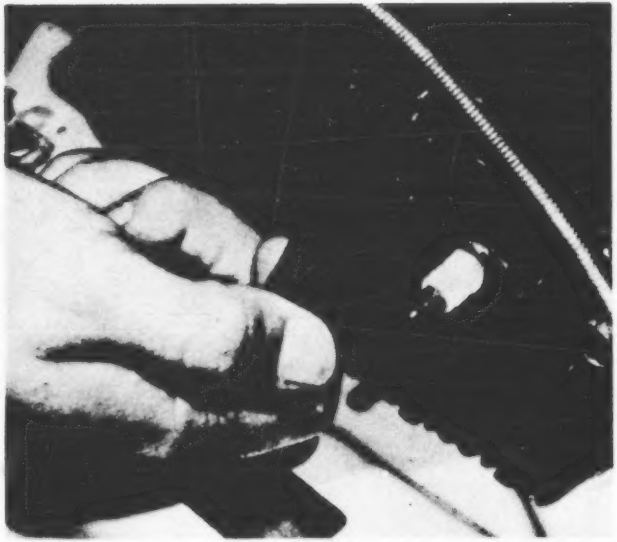


32. Carefully fit the hose on the breather and carburetor tubes.

33. Replace the air cleaner and tighten the bolt with a screwdriver.

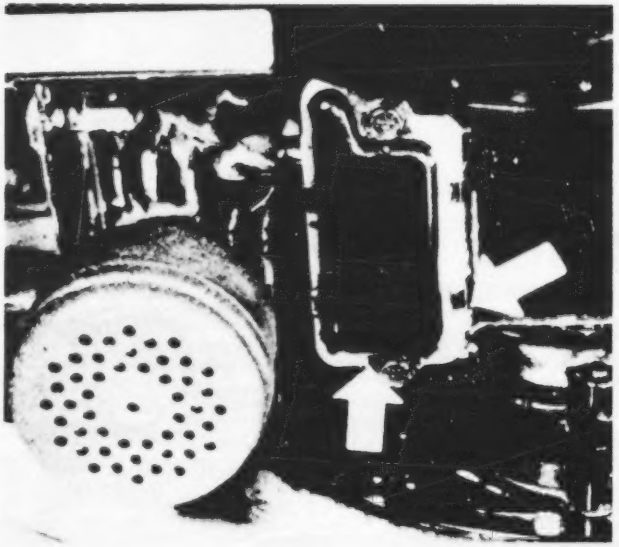


34. Replace the spark plug.

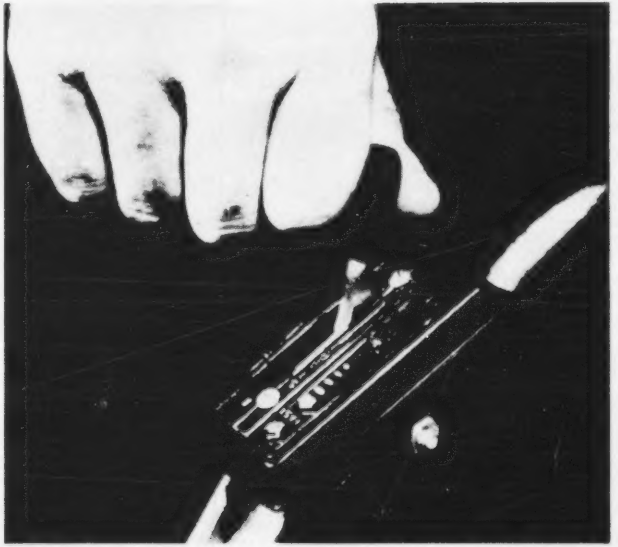


35. Replace the spark plug wire.

36. Crank the engine and let it run for a few minutes.



37. While the engine is running, check for oil leaks around the breather.



38. Shut off the engine.

39. Clean up the work area. Clean and replace tools in the tool room and put away the dirty shop towels.

CAN YOU SERVICE THE CRANKCASE BREATHER?

Each day, practice doing this job and fill in the chart on the next pages. Use a rating number below that describes how well you can do the steps of the job. By the end of 10 days, you will see your progress.

RATING	MEANING
1	– Can do simple parts of this job, but still needs to be shown how to do most of it.
2	– Can do most parts, but may need help on hard parts.
3	– Can do all parts without help. Ready for job entry with shop supervision.

CHART FOR CAN YOU SERVICE THE CRANKCASE BREATHER?	DAYS									
	1	2	3	4	5	6	7	8	9	10
1. Assembles and uses tools correctly										
2. Checks the breather and fiber disc valve for proper operation (Steps 1-7)										
3. Removes spark plug before servicing breather (Steps 8-9)										
4. Removes breather and checks fiber disc valve with wire gauge (Steps 10—Note, p. 11)										•
5. Disassembles breather, cleans venting holes, washes and dries breather parts (Steps 13-22)										

CHART FOR CAN YOU SERVICE THE CRANKCASE BREATHER?	DAYS									
	1	2	3	4	5	6	7	8	9	10
6. Assembles breather parts correctly and replaces old breather gaskets with new ones (Steps 23-27)										
7. Replaces breather and breather hose (Steps 28-32)										
8. Replaces spark plug and spark plug wire (Steps 34-35)										
9. Checks for oil leaks around the breather (Steps 36-38)										
10. Cleans up work area (Step 39)										